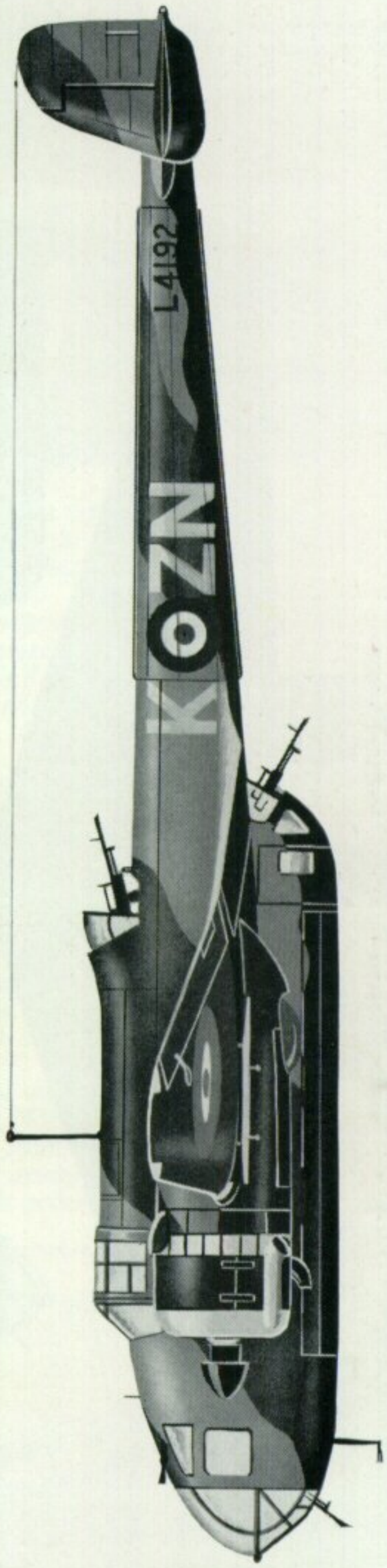
PROFILE PUBLICATIONS

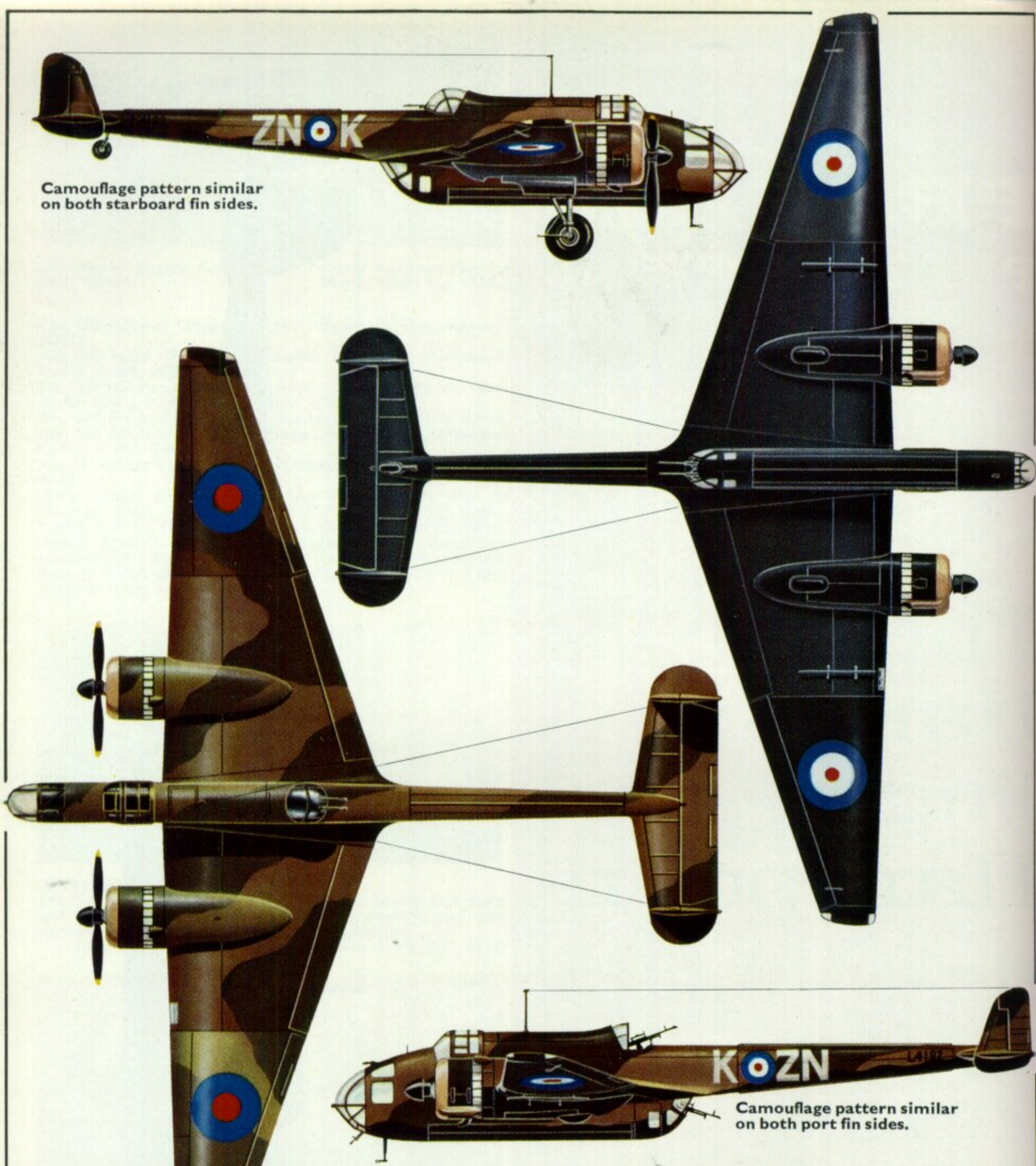
The Handley Page Hampden

NUMBER 58

TWO SHILLINGS



Camouflage pattern similar
on both starboard fin sides.



Camouflage pattern similar
on both port fin sides.

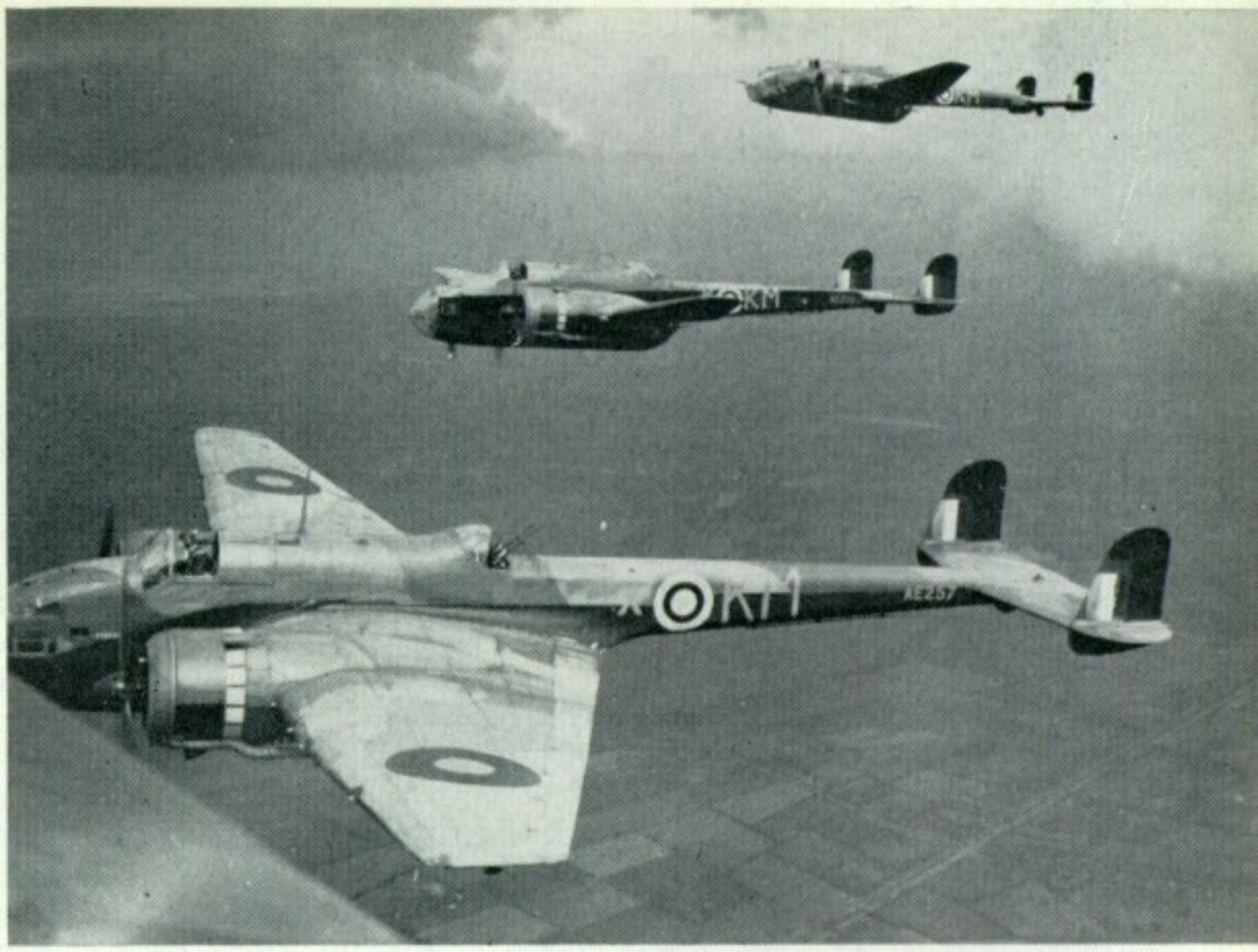
Hampden I, L4192, of No. 106(B)
Squadron based at Finningley, Yorks.,
in April, 1940.

© JAMES GOULDING

0′ 5′ 10′

The Handley Page Hampden

by Philip J. R. Moyes



Right: *A formation of Hampdens of No. 44 ("Rhodesia") Squadron, including* AE257 KM-X *and* AE202 KM-K.
(Photo: Imperial War Museum)

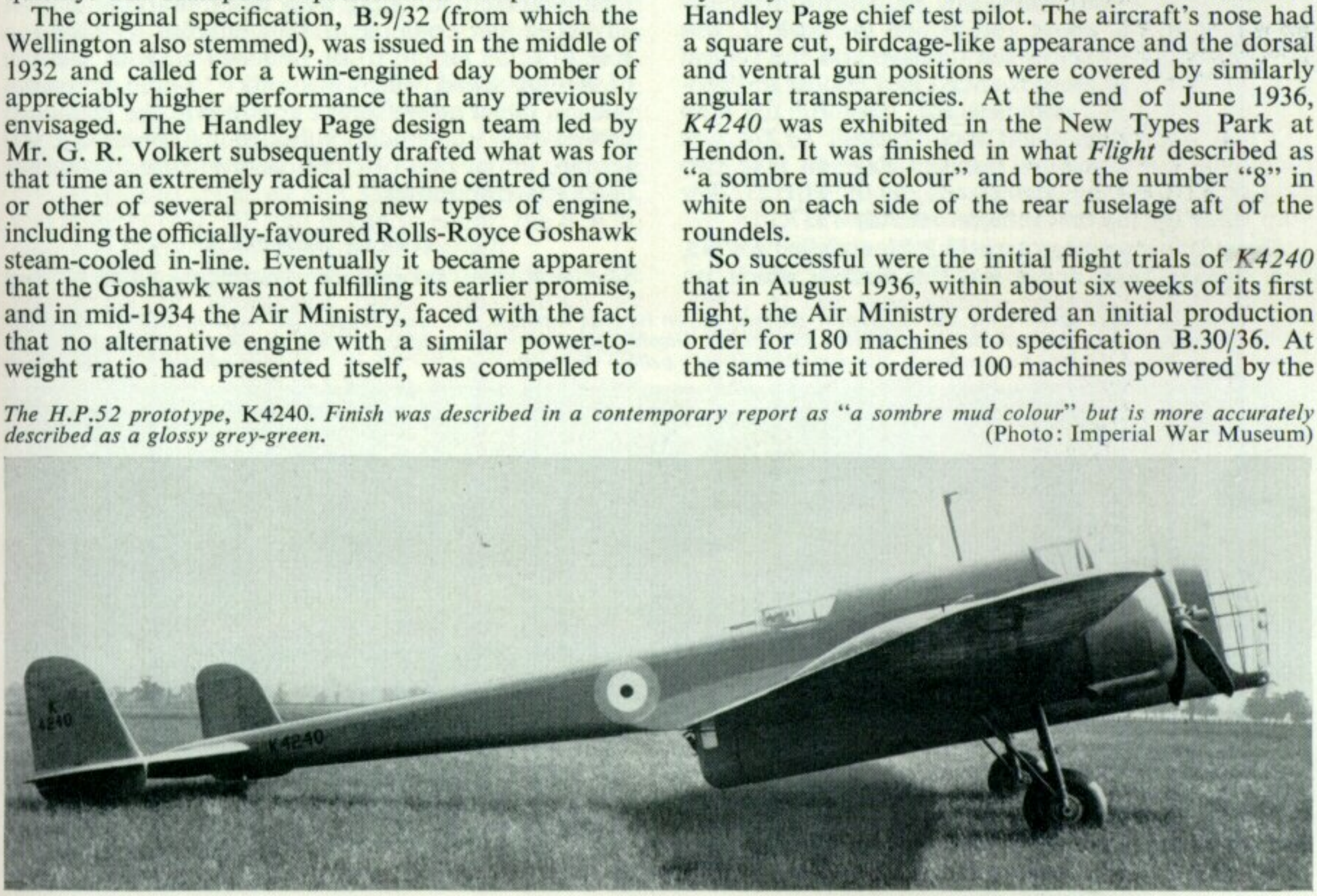
One of the trio of big twin-engined bombers which bore the brunt of R.A.F. Bomber Command's early offensive in W.W.II, the Hampden was the outcome of a 1932 Air Ministry Specification and was named, appropriately enough, after John Hampden, the 17th-century defender of civil liberties. Unlike its contemporaries, the Wellington and Whitley, it lay between them and the Blenheim and was in a "high performance" category of its own. The Air Ministry was feeling its way with bombers and was torn between taking a large load far and a smaller load quickly. The Hampden represented a compromise.

The original specification, B.9/32 (from which the Wellington also stemmed), was issued in the middle of 1932 and called for a twin-engined day bomber of appreciably higher performance than any previously envisaged. The Handley Page design team led by Mr. G. R. Volkert subsequently drafted what was for that time an extremely radical machine centred on one or other of several promising new types of engine, including the officially-favoured Rolls-Royce Goshawk steam-cooled in-line. Eventually it became apparent that the Goshawk was not fulfilling its earlier promise, and in mid-1934 the Air Ministry, faced with the fact that no alternative engine with a similar power-to-weight ratio had presented itself, was compelled to relax the bomber's tare weight to permit the installation of the heavier and more powerful Bristol Perseus or Pegasus air-cooled radials.

The prototype Handley Page B.9/32 bomber (company designation H.P.52), serialled *K4240*, eventually appeared in 1936 and was powered by two Bristol Pegasus P.E.5S(a) nine-cylinder radial engines —forerunners of the Pegasus XVIII—with single-stage blowers and driving three-bladed de Havilland variable-pitch airscrews. This prototype flew for the first time on 21st June 1936, from Radlett, piloted by Major J. L. H. B. Cordes, who was then the Handley Page chief test pilot. The aircraft's nose had a square cut, birdcage-like appearance and the dorsal and ventral gun positions were covered by similarly angular transparencies. At the end of June 1936, *K4240* was exhibited in the New Types Park at Hendon. It was finished in what *Flight* described as "a sombre mud colour" and bore the number "8" in white on each side of the rear fuselage aft of the roundels.

So successful were the initial flight trials of *K4240* that in August 1936, within about six weeks of its first flight, the Air Ministry ordered an initial production order for 180 machines to specification B.30/36. At the same time it ordered 100 machines powered by the

The H.P.52 prototype, K4240. *Finish was described in a contemporary report as "a sombre mud colour" but is more accurately described as a glossy grey-green.*
(Photo: Imperial War Museum)



24-cylinder H-type Napier Dagger air-cooled engine, the responsibility for their production being allocated to Short and Harland at Belfast.

The flight testing of the first prototype H.P.52 did not proceed entirely without untoward incidents. On one occasion an airscrew and part of one of the engines flew off over Elstree, struck the fuselage just aft of the pilot's cockpit and disappeared into some fields. On another occasion a belly-landing resulted from a fault in the indicator circuit which displayed a green light despite the fact that the wheels were still retracted. Only *after* the aircraft had ploughed a furrow in the turf did the light turn to red! Acting as flight observer and seated in the extensively glazed nose was Mr. R. S. Stafford, then chief aerodynamicist (he later succeeded G. R. Volkert as the company's technical director) and from him came the impassive remark, "There's a hell of a lot of grass in here!"

In 1937 a second prototype appeared and in June it was demonstrated in flight at Hendon. Serialled *L7271*, and resplendent in its natural aluminium finish, this aircraft differed from the first prototype externally in several ways. The pitot head, formerly on a long pylon, above and behind the cockpit, was now repositioned below the fuselage and the ventral gun position was more rounded and almost in "production" form. To complete the "facelift" the nose too had undergone slight modification. *L7271* was eventually converted by Handley Page to take two Dagger VIII H-type engines and, as the H.P.53, flew with these for the first time on 1st July 1937.

The production prototype H.P.52, serialled *L4032*, flew in May 1938, and it was this aircraft which, on 24th June 1938, was christened by Viscountess Hampden at an official ceremony at Radlett. Power plant of the production bomber was the 1,000-h.p. Pegasus XVIII engine with two-speed superchargers. It differed from the two original prototypes in several other respects: the nose was now a curved Perspex moulding incorporating an optically-flat bomb-aiming panel; and the dorsal and ventral gun positions were revised, the former having a roomier, semi-circular cupola hinged to allow it to be pushed back over the gunner's head.

Speedy and economic production of the Hampden was made possible by the employment of the split-assembly method of construction, a technique which Handley Page had done much to develop and one which it had previously applied to the Harrow twin-engined bomber. This method was in fact so satisfactory in the case of the Harrow—an order for 100 aircraft was completed in less than two years (and three months ahead of contract date, incidentally)—that it was developed to the full in the Hampden. Here, in addition to the production problem of manufacture of sub-assemblies outside jigs, there was that of installing equipment and services in a fuselage with a maximum width of only three feet. Each fuselage side was assembled as a component in its jig, then removed to a stand where services, equipment and details were easily installed. Main cable runs were put into the aircraft in shallow channel-type conduits, as with the Harrow. All possible assembly work was done at the benches before installation in the aircraft.

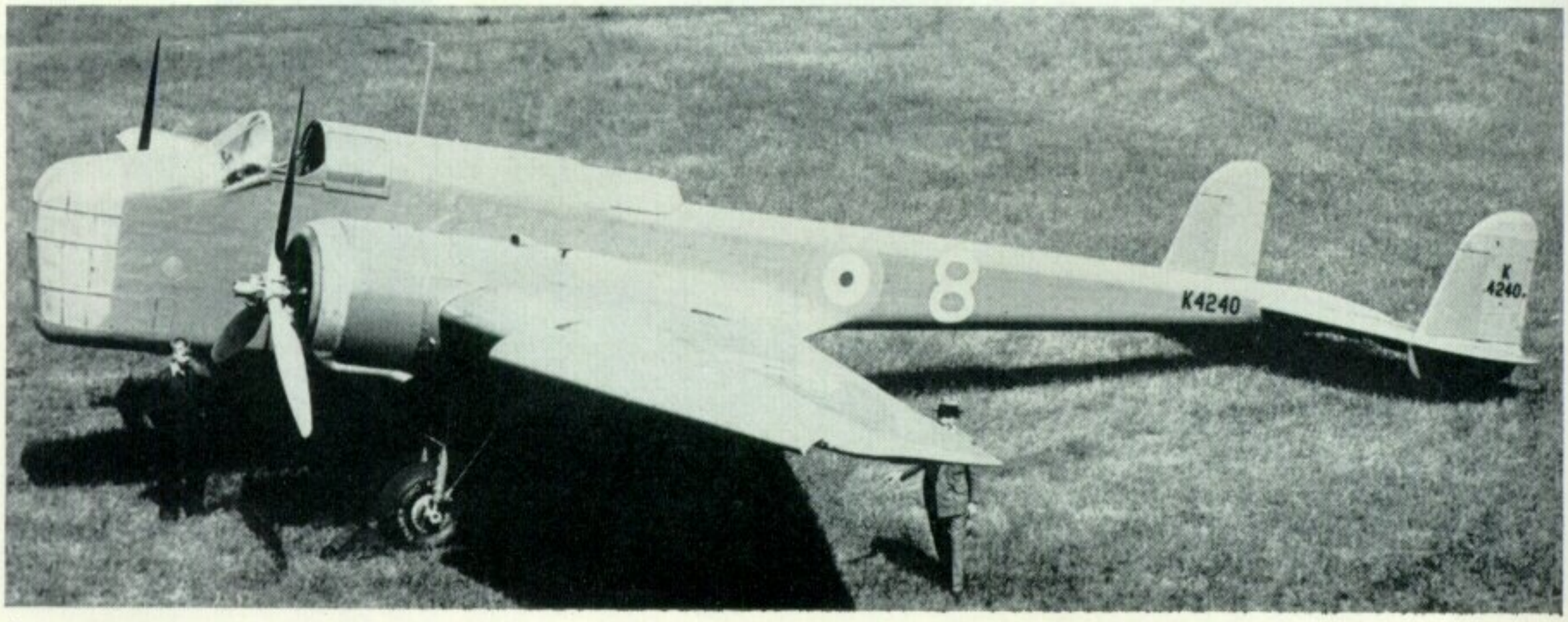
It was the Hampden's slim, compact fuselage with a long boom-like extension behind the deep section housing crew and bomb load that inspired the nick-names "Flying Suitcase", "Panhandle" and "Flying Tadpole".

Another leading feature of the Hampden was a highly-tapered, low-drag wing incorporating the most advanced slot equipment. This enabled its high top speed of 265 m.p.h. to be obtained without sacrifice of landing speed, which was only 73 m.p.h. In consequence, under active service conditions, the Hampden proved easy to handle, although its speed and 980 ft./min. initial rate of climb were greatly in advance of its contemporaries.

INTO SERVICE

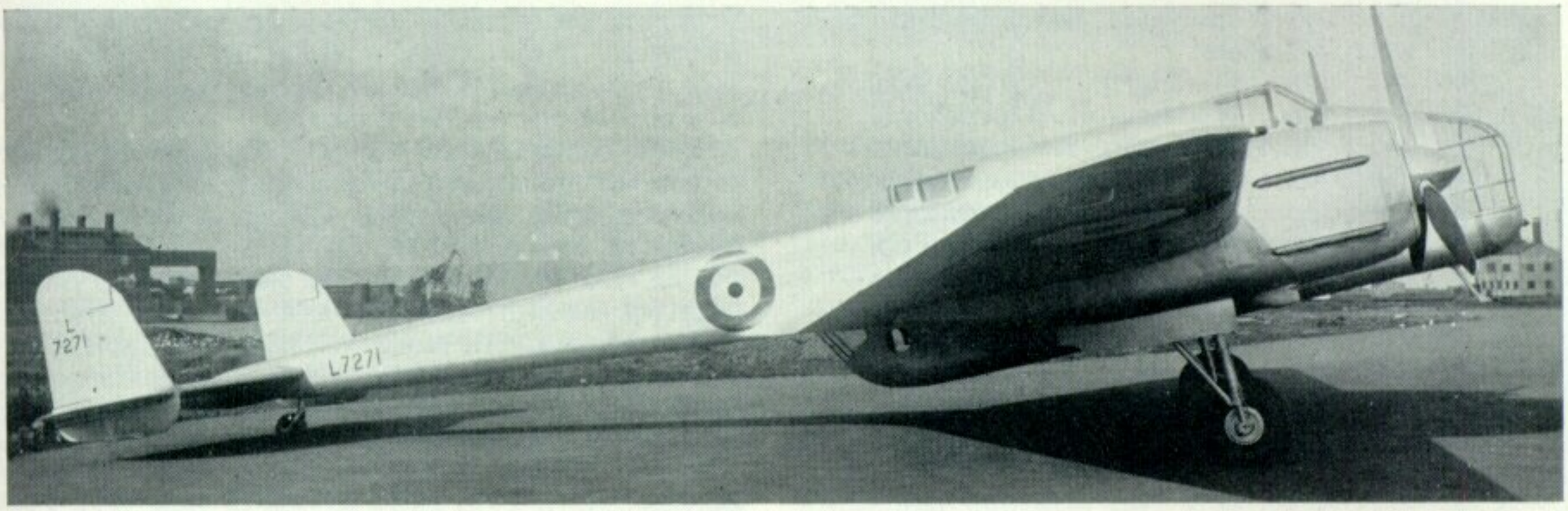
The first two production Hampdens, *L4032* and

(Top left and below): K4240, *the H.P.52 prototype bearing, on its rear fuselage, the New Types Park number "8" for the 1936 SBAC Display held at Hatfield. Earlier, for the 1936 R.A.F. Display at Hendon the number "8" had appeared on its nose instead. In the photo below the late Sir Frederick Handley Page is seen behind the port wing.* (Lower photo: *The Aeroplane*)



(Above): *The second prototype H.P.52*, L7271. (Photo: *Flight*)

(Below): L7271 *re-engined with Dagger XIIIs as the prototype H.P.53 photographed at Belfast after delivery to Shorts.*

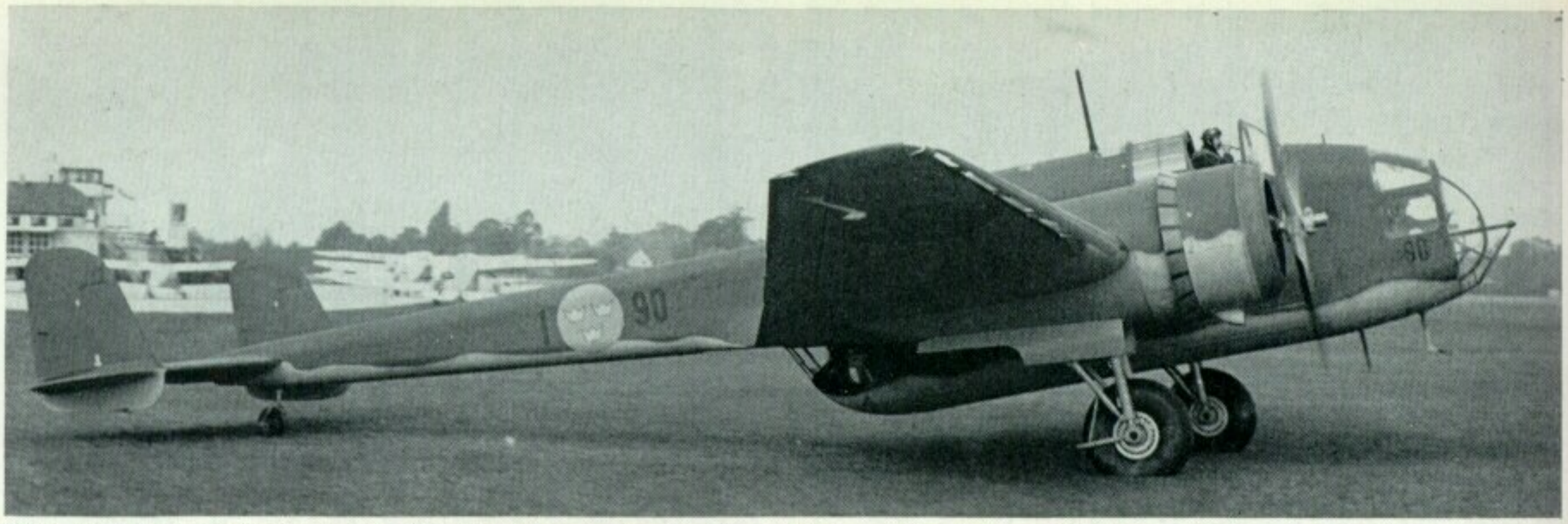


L4033 were allotted to the Aircraft and Armament Experimental Establishment at Martlesham Heath, and it was the third aircraft, *L4034*, which, after undergoing handling trials at the Central Flying School at Upavon, was the first to enter R.A.F. squadron service; it was delivered to No. 49 Squadron, based at Scampton (and then flying Hinds) on 20th September 1938, and was followed by *L4039–L4046* inclusive before November. By the end of the year two squadrons (Nos. 49 and 83) were fully equipped, and another (No. 50) had begun to equip; the R.A.F. then had thirty-six Hampdens on strength.

Meanwhile, arrangements had been made for the production of Hampdens under sub-contract by English Electric at Preston, this company being awarded its initial contract for seventy-five aircraft on 6th August 1938, while in Canada, several prominent financial organisations and firms had jointly formed Canadian Associated Aircraft Limited, receiving an initial order for eighty Hampdens for the R.A.F. About this time too a Hampden was supplied to the Royal Swedish Air Force, being flown to Sweden from Heston on 1st September. This aircraft (Swedish designation P.5) was almost identical to those of the R.A.F. but had 1,010-h.p. Pegasus XXIV engines instead of Pegasus XVIIIs. After serving with the R.S.A.F. for many years, it was sold in November 1945 to the S.A.A.B. aircraft company. Registered SE-APD it was then used as a flying test-bed for electronic equipment until early 1947. It was cancelled from the Swedish Civil Register on 17th November 1947. At one time Sweden planned to build seventy Hampdens under licence, but this scheme was abandoned.

On 3rd September 1939, ten squadrons of Bomber Command (all of them in No. 5 Group) were flying

The first production Hampden, L4032, *which figured in the official christening ceremony at Radlett.*



The Hampden which was supplied to Sweden seen about to leave Heston on its delivery flight on 1st September 1938.
(Photo: *The Aeroplane*)

Hampdens and their individual locations and classifications were as follows:

No. 7 Sqdn.	Finningley	Group Pool
No. 44 Sqdn.	Waddington	Operational
No. 49 Sqdn.	Scampton	Operational
No. 50 Sqdn.	Waddington	Operational
No. 61 Sqdn.	Hemswell	Operational
No. 76 Sqdn.	Finningley	Group Pool
No. 83 Sqdn.	Scampton	Operational
No. 106 Sqdn.	Evanton (moving to Cottesmore)	Reserve
No. 144 Sqdn.	Hemswell	Operational
No. 185 Sqdn.	Cottesmore	Reserve

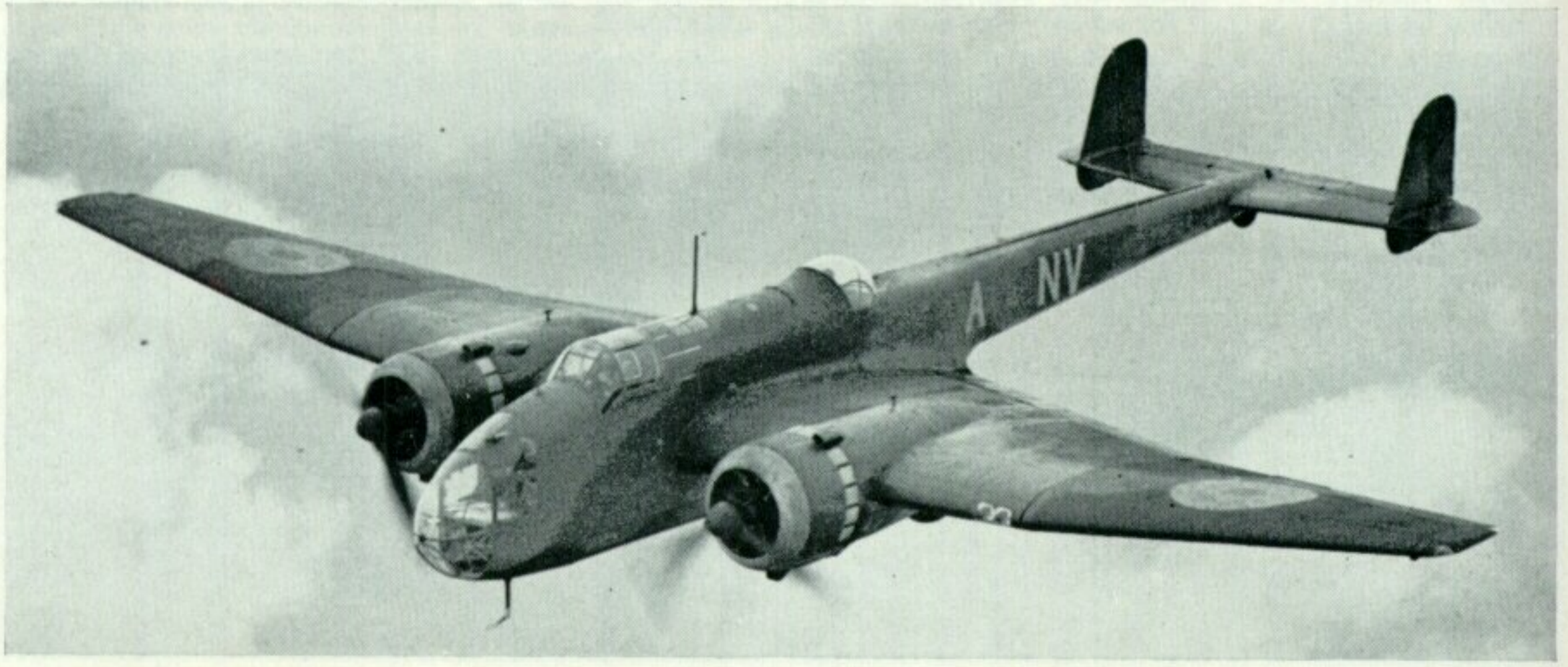
The Hampdens' early operations were confined to armed reconnaissance against German naval units, and by the end of 1939 No. 5 Group had flown twenty-one such missions in daylight. On 29th September eleven Hampdens from No. 144 Squadron were detailed to search part of the Heligoland Bight to within sight of the German coast. The Hampdens operated in two formations, one of five and one of six aircraft. The formation of five was completely destroyed by enemy fighters from the North Frisian Islands. From 18th December Bomber Command tacitly abandoned the belief that Hampdens and Wellingtons could operate by day in the face of German fighter opposition. Thenceforth, it despatched them only under cover of darkness.

Early in 1940 Hampdens began to take a share in dropping propaganda leaflets—operations popularly known as "bumph raids"—and by the end of that year No. 5 Group had flown 123 night sorties with leaflets at a cost of one aircraft missing.

In the winter of 1939–40 the production of magnetic mines was undertaken in this country and Hampdens were adapted to carry them, the first of these weapons being laid by night-flying Hampdens of Nos. 44, 49, 50, 61 and 144 Squadrons in enemy waters on the night of 13/14th April 1940, a few days after the German invasion of Norway. The aim of the R.A.F.'s minelaying campaign (which was undertaken jointly by Bomber and Coastal Commands and, in the long run, proved extremely profitable) was to lay the weapons in areas unapproachable by our own ships. Between April 1940 and the end of that year 1,209 minelaying sorties were flown by No. 5 Group's Hampdens, 703 mines were laid, and twenty-one aircraft were missing on these operations—a casualty rate of less than 1·9 per cent of sorties, which was considered very satisfactory for work which, although undoubtedly less dangerous than operating over Germany, was by no means easy.

During the Norwegian campaign Hampdens were again pressed into service as day bombers, and again they quickly proved to be "cold meat" for any determined enemy fighter. The plain facts were, of course, that the Hampden was still a most feebly armed aircraft with a single gun on top and a single

Hampden L4122 NV-A *of No. 144 Squadron* circa *May 1939.*



A trio of Hampdens of No. 106 Squadron photographed in April 1940. Their serials and codes are L4192 ZN-K, P1320 ZN-B, *and* L4190 ZN-F, *and one of them forms the subject of the five-view drawing on page 2.* (Photo: *Flight*)

one underneath manned by a gunner in a hopelessly cramped position, together with two guns firing forward, one of which, being fixed, was completely useless. Drastic action following the losses on daylight raids in the spring of 1940 resulted in the Hampden's movable rear armament being doubled and the story of how this was done outside normal Service "channels" and in a very short time-span by (then) Air Commodore Arthur Harris, Group Captain E. A. B. Rice, and the typically English "family" firm Alfred Rose and Sons of Gainsborough, Lincolnshire, has already been told in detail by Sir Arthur Harris in his book *Bomber Offensive.*

FIRST BOMBS ON GERMAN SOIL

On the night of 19/20th March 1940, Hampdens took part in the first deliberate bombing of German soil—an attack on the enemy's hangars and slipways for magnetic minelaying seaplanes at Hörnum on the Island of Sylt. This was in the nature of a reprisal for an enemy raid on Scapa three days earlier. Whitleys of No. 4 Group also visited Hörnum on 19/20th and they were in fact the first aircraft to bomb the target.

Following the German break-through in the Low Countries, Hampdens attacked targets in support of the Allied land forces. They made history again on the night of 11/12th May when they took part in the first big raid on the German mainland, two days after the *Luftwaffe* had dropped bombs on the British mainland; their objective was railways at München Gladbach.* Later that summer they were flung into battle against the German barges concentrated in the Channel and North Sea ports for the invasion of Britain.

During the summer of 1940 two V.C.s were won for operations in Hampdens. The first was awarded to Flight Lieutenant R. A. B. Learoyd, who became the first Bomber Command pilot to receive the decoration. Learoyd, of No. 49 Squadron, was flying Hampden *P4403* (which, incidentally, carried a Walt Disney "Pinnochio" emblem on its nose) one of a force of five from Nos. 49 and 83 Squadrons, which on the night of 12/13th August attacked with delayed-action bombs an aqueduct in the Dortmund-Ems Canal. The second V.C. went to Sergeant John Hannah, wireless operator/air gunner in Hampden *P1355* OL-W of No. 83 Squadron, for extinguishing a fire in the aircraft following an attack on invasion barges at Antwerp on the night of 15/16th September.

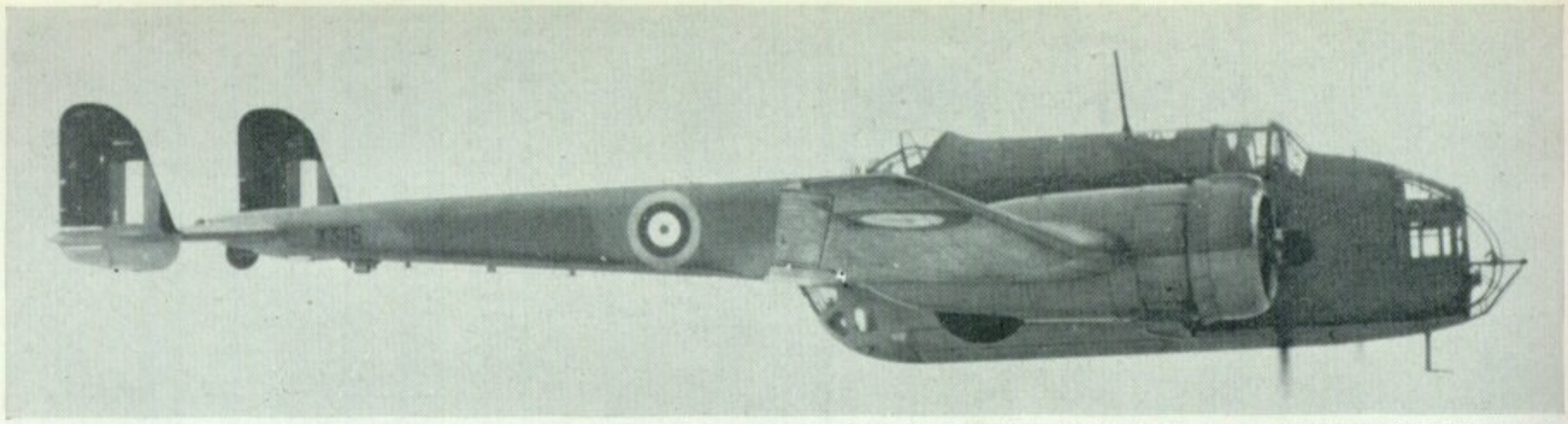
No. 83 Squadron had, by the way, been the first Bomber Command unit to drop a 2,000-lb. bomb on the enemy, a few months before Hannah's courageous action. The 2,000-pounder (Semi-Armour Piercing) was dropped by Hampden *L4070* captained by Flying Officer—as he then was—Guy Gibson (later to win the V.C. while commanding No. 617 Squadron) in a raid against the German battle cruiser *Scharnhorst* at Kiel on 1st/2nd July 1940, and the incident is graphically described in Gibson's *Enemy Coast Ahead.*

Production of the Hampden by the parent company ceased in July 1940, with the 500th aircraft, but prior to this deliveries from English Electric's assembly line had begun, the first Preston-built machine, *P2062*, flying on 22nd February 1940. In all, English Electric built 770 Hampdens, the last leaving the line on 15th March 1942.

The first Canadian-built Hampden, *P5298*, flew on 9th August 1940, and by the following October production had reached a rate of fifteen per month. These aircraft were ferried to the United Kingdom, the total Hampden production by Canadian Associated Aircraft reaching 160 machines when the last was

Air gunners carrying twin-Vickers "K" guns, with a Hampden of No. 61 Squadron—code letters "QR"—in the background

**A force of eighteen Hampdens (5 Group) and eighteen Whitleys (4 Group) was despatched, most of which reported successful sorties. This was in fact the second raid on the German mainland, a force of eight Whitleys having bombed the Geldern, Goch, Aldekerk, Rees and Wesel areas on the previous night.*



(Above and below): X3115, *first of two Hampdens which were fitted with 1,100 h.p. Wright Cyclone GR1820-G105A radials. In this form they were known by the designation H.P.62 Hampden II.*

delivered at the end of 1941. At one time it was proposed that Canadian-built Hampdens be fitted with 1,100-h.p. Wright Cyclone GR1820-G105A radials, but this scheme did not see fruition. However, in 1940 two Hampdens, *L4032* and *X3115*, were experimentally fitted with Cyclones and these became known as H.P.62 Hampden IIs. The Preston-built *X3115* served with No. 415 (Swordfish) Squadron, R.C.A.F., from August 1942 until June 1943 but during that time it is believed to have had Pegasus engines.

On the night of 25/26th August 1940, Hampdens took part (with Whitleys) in the R.A.F.'s first bombing raid on Berlin. Among the aircraft which claimed to have bombed the "Big City" were Hampdens from Nos. 44, 49, 50, 61 and 83 Squadrons.

Hampdens operated in each of the three "1,000-bomber" raids of mid-1942 although by then their days as operational night bombers were numbered, and on 14/15th September came the last Bomber Command sorties, when aircraft of No. 408 ("Goose") Squadron, R.C.A.F., attacked Wilhelmshaven.

TORPEDO BOMBER

Following experiments with Hampdens (including *L4037*, *L4182*, *L4211*, *P5388* and *AT139*) at the Torpedo Development Unit, Gosport, two Hampden squadrons (No. 144 and No. 455, R.A.A.F.) were transferred from Bomber Command to Coastal Command in April 1942 for employment in the torpedo-bombing rôle. Later in the year detachments from each of them went to Russia and, operating from Vaenga, near Murmansk, helped guard the North Russian convoys. The outward journey was extremely hazardous, and one Hampden was shot down by a Russian fighter while coming in over a prohibited area. It "ditched" off-shore and sank before the wounded air gunner could be released: the rest of the crew were then "shot up" in the water but managed to struggle ashore, where they were greeted with rifle fire until their cries of "Angliski" earned recognition. Two other Hampdens, one of which was damaged beyond repair, ran out of petrol and made forced landings on Russian soil. Worst of all, no less than six crashed in Norway or Sweden. Those crews who reached their goal received a well-earned tribute from the Prime Minister for having—as one pilot put it—"got there without wireless, in very bad weather, with very poor maps, and having as our only means of identification the undercarriage, which we put down as a friendly gesture when the quick-fingered Russians started to shoot". After completing their operations, the two squadrons handed over their remaining serviceable Hampdens to the Russians. What use the Russians made of these (if any) is a mystery.

Hampdens continued in service as torpedo-bombers until 1943, two other Coastal Command squadrons so equipped being No. 415 ("Swordfish") Squadron, R.C.A.F. and No. 489 Squadron, R.N.Z.A.F. The

A Hampden of No. 44 ("Rhodesia") *Squadron seen with a "trainload" of 2,000-lb. high-capacity bombs. The latter—popularly known as "land-mines" — were developed from the 1,500-lb. sea mine and, like that weapon, had parachutes instead of tails. Accurate aiming was impossible and eventually this type of bomb was fitted with a metal tail and carried in Stirlings.*

Hampden torpedo-bombers. Top to bottom: AE436 PL-J *of No. 144 Squadron, summer 1942.* (Photo: Charles E. Brown); AT114 GX-D *of No. 415* ("*Swordfish*") *Squadron, R.C.A.F.;* UB-C *of No. 455 Squadron, R.A.A.F.* (Photo: R.A.A.F.); AN127 *of No. 489 Squadron, R.N.Z.A.F. In two of the photographs the characteristic enlarged bomb bay of the Hampden T.B.I. can be seen.*

actual dates when the four squadrons ceased to fly Hampdens operationally were: No. 144 Squadron—18/19th January 1943; No. 415 Squadron—23rd September 1943; No. 455 Squadron—10th December 1943; and No. 489 Squadron—26th October 1943. The Hampden T.B. Mk. I, as the torpedo-bombing variant was eventually designated, differed from the standard Hampden B. Mk. I in having a slightly deeper bomb bay to accommodate an 18-in. torpedo internally. In addition to the torpedo it could carry two 500-lb. bombs on racks under the wings.

To return now to the Dagger-engined version of the

(Top to Bottom): *Hampden* AE269 EQ-W *of No. 408 ("Goose") Squadron, R.C.A.F. (Another R.C.A.F. bomber squadron which operated Hampdens was No. 420 ("Snowy Owl") Squadron; Hampden* P5304 JS-L *of No. 16 O.T.U.* (Photo: Charles E. Brown); *Hereford* L6070 GL-A2 *of No. 14 O.T.U.* (Photo: *The Aeroplane*). Note: *When No. 185 Squadron became No. 14 O.T.U. the code letters "GL" were retained but eventually the codes "AM" were adopted. Hampden* P 1316 GL-P *and behind it a Hereford, both of No. 14 O.T.U. Cottesmore, July 1940* (Photo: Imperial War Museum).

Hampden. The production model built by Short and Harland at Belfast, was designated H.P.53 by the parent company and named Hereford. Built to specification B.44/36, the first production Hereford (*L6002*) flew late in 1939 powered by 24-cylinder Napier Dagger VIII engines each rated at 955 h.p. at 4,275 r.p.m. for take-off at sea level. Its tare weight was 11,700 lb. and its all-up weight 17,800 lb. Performance was almost identical to that of the Hampden, maximum speed being 265 m.p.h. at 15,500 ft., and cruising speed being 172 m.p.h. The Dagger engines (which were extremely noisy and had remarkably high revs.) proved temperamental, to say the least, and dogged the Hereford from the outset. Their teething troubles were never satisfactorily cured and of the eventual total of 150 machines ordered, many were converted to Hampden configuration after leaving the production line. Only a very few Herefords entered squadron service—with No. 185 Squadron, Cottesmore, which was serving as an operational training squadron at the time—and was mainly equipped with Hampdens*—others being employed as crew trainers by No. 16 O.T.U. at Upper Heyford, as well as other training units.

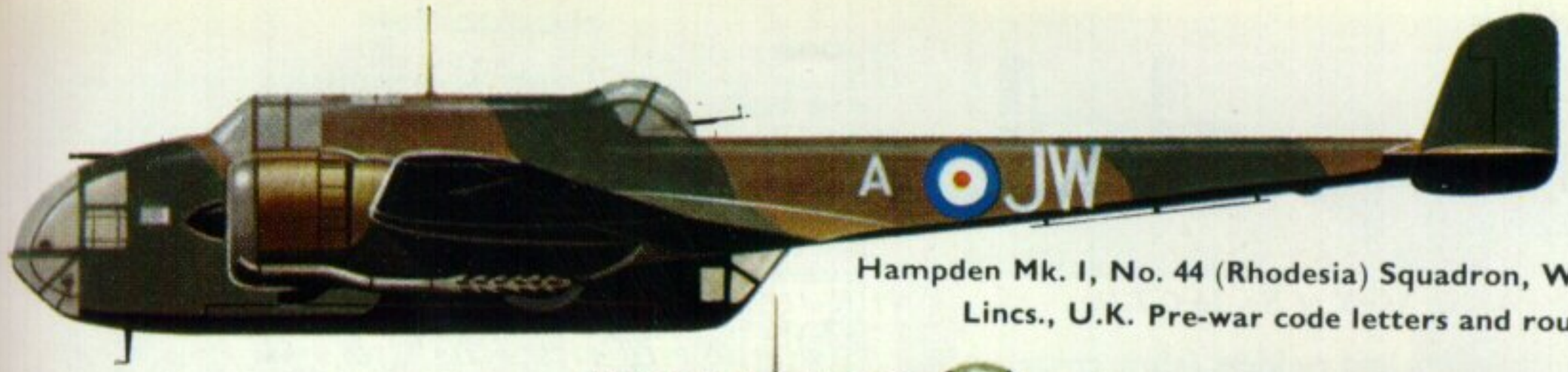
STRUCTURE

Fuselage: Monocoque all-metal structure with flush-riveted stressed-skin. In three jig-built sections, nose portion, centre section and tail boom, the two latter being built in halves, split longitudinally.

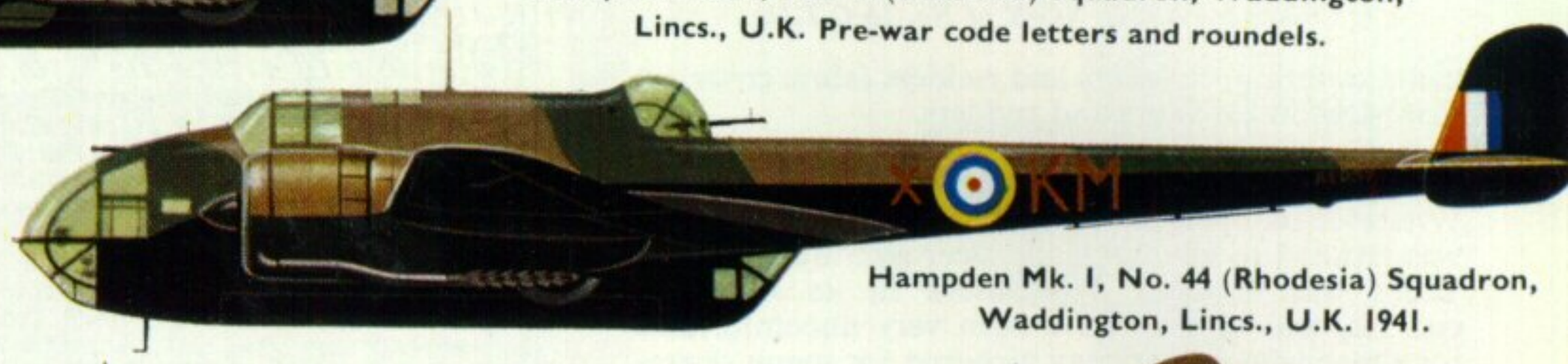
Wings: All-metal structure with flush-riveted stressed-skin. Each section built up of a jig-built main girder spar, leading-edge section and trailing-edge section. Incorporated latest Handley Page slot system, including wing-tip slots and had hydraulically-operated trailing-edge flaps. Flaps and ailerons each had a main "D" spar as stress-carrying member and forming leading-edge, tubular ribs and fabric covering.

Tail Unit: Cantilever monoplane tailplane and elevators and twin fins and rudders. Tailplane structure same as for wings but had central box spar. Fins had

**In April 1940, No. 185 Squadron became No. 14 O.T.U.*



Hampden Mk. I, No. 44 (Rhodesia) Squadron, Waddington, Lincs., U.K. Pre-war code letters and roundels.



Hampden Mk. I, No. 44 (Rhodesia) Squadron, Waddington, Lincs., U.K. 1941.

Hampden Mk. I, No. 49 Squadron, Scampton, Lincs., U.K. Pre-war serials in white under port and stbd. wings.

Hampden Mk. I, No. 49 Squadron, Scampton, Lincs., U.K. 1940.

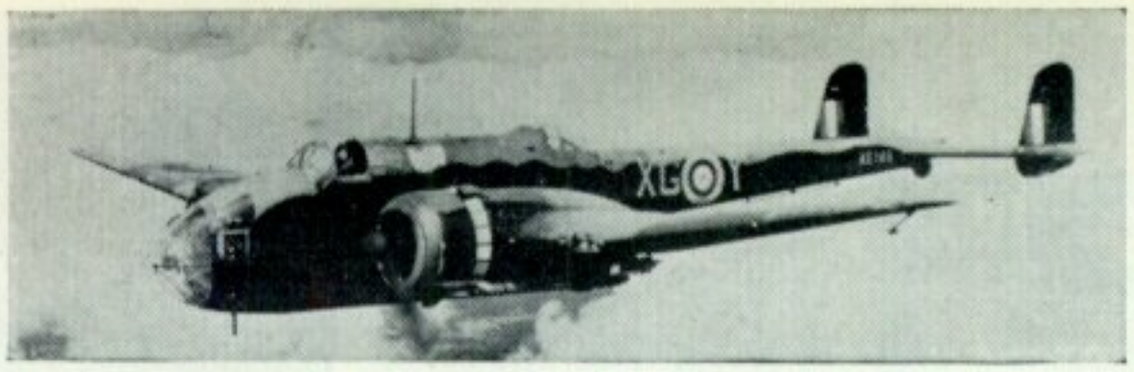
Hampden Mk. I, No. 50 Squadron, Skellingthorpe, Lincs., U.K. 1941.

Hampden Mk. I, No. 144 Squadron, Hemswell, Lincs., U.K. Pre-war code letters and roundels.

Hampden Mk. I, No. 144 Squadron, Hemswell, Lincs., U.K. 1941.

Hampden Mk. I, No. 16 Operational Training Unit

© WARRD



Hampden AE148 XG-Y *of No. 16 O.T.U.*

metal covering, elevators and rudders fabric covering. Trim-tabs in elevators and rudders.

HANDLING NOTES

Whatever its operational shortcomings the Hampden was reputed to be one of the nicer aircraft in the air. There was certainly little room in its one-place cockpit, and it must have been very uncomfortable for those who had to stay airborne for many operational hours. Nor were the various control items any too accessible to the pilot until he had become accustomed to the layout. "Quaintest of all, at least to present day notions" (wrote "Indicator"* in a handling report in *Flight* in 1945) "was the 'power bolt', by means of which the hydraulic urge was made available for the various services. This lay unassumingly to one's right beside the hood runner, and looking exactly like some jettison or other hood control. More than one newcomer to the type failed to find it or, at least, to understand its purpose after an over-confidently unbriefed departure, and, to the vast annoyance of the ground staff, duly pulled out the emergency 'chain' in order to obtain an undercarriage so necessary for normal landing purposes."

"Indicator" went on to say that in contrast to all this, the pilot *could* see out of the Hampden, and he always felt part and parcel of the machine. Although it was then classified as a "heavy", it was really extraordinarily mobile on the controls, and when making steep turns the turning view from wing-tip to wing-tip, was unimpeachable. "Even the often-maligned Hereford was pleasant enough once it had become airborne. The trouble seemed to be that, particularly on the boggy airfields of the very early 'forties, the Daggers, as they were cowled in the Hereford, became much too hot on the ground and were somewhat over-cool in the air. The result was that things tended to distort and even, occasionally, to stop after a momentary spewing of con. rods, gear wheels and other mechanical odds and ends. More normally, it just failed to start.

"But in my flying the engines always continued to give a proportion of power whatever their state, and in the early ferrying days we used to bring them, without qualms, straight across the Irish Sea at wave level. The Hereford had one memorable fault—after a long flight conversation between crews had, for the rest of the day, to be continued in a series of shouts and whispers, such had been the effect of the high-pitched exhaust note and high revolutions on our ear drums.

"We even became accustomed, while occasionally travelling in the Hampden as a passenger, to the inadequate looking rear fuselage and to the continuous twitchings of the empennage at the end of it. This always looked as if it ought ultimately to break . . . rear gunners used to say that it was nice to have the 'pencil' fuselage because there was so much less for the flak to hit."

**Pseudonym of Mr. H. A. Taylor, wartime R.A.F. ferry and test pilot and currently Air Transport Editor of* Flight International.

PRODUCTION

K4240 1st prototype.

L7271 2nd prototype. Converted to prototype Hereford. Became 2057M.

L4032–4211 (180 a/c, H.P.-built. Ordered Aug. 1936). (*L4032* later experimentally fitted with Wright Cyclones. *L4038, L4041, L4075, L4076, L4086, L4091, L4105, L4115, L4118, L4141, L4144, L4150, L4170, L4196, L4201* and *L4204* converted to Hampden T.B. (Torpedo Bomber). *L4207* to E.E. Co. as pattern a/c. *L4208–4211* to Canada as pattern a/c.)

P1145–1189, P1194–1230, P1233–1261, P1275–1305, P1309–1356 (200 a/c. H.P.-built). (Following a/c converted to T.B.: *P1145, P1147, P1150, P1151, P1157, P1158, P1160, P1164, P1166, P1169, P1177, P1188, P1189, P1207, P1208, P1214, P1215, P1219, P1229, P1236–1238, P1243, P1245, P1246, P1249, P1250, P1257, P1258, P1273, P1282, P1284, P1286, P1296, P1312–1314, P1352, P1356. P1350* used from Feb. 1940 for speed increase investigation.)

P2062–2100, P2110–2145 (75 a/c. E.E. Co.-built. Ordered 6th Aug. 1938. First off, *P2062*, flew at Salmesbury airfield 22nd Feb. 1940). (Following a/c converted to T.B.s: *P2064, P2065, P2067, P2078, P2080, P2084, P2095, P2113, P2119* and *P2126.*)

P4285–4324, P4335–4384, P4389–4418 (120 a/c. H.P.-built.) (Following a/c converted to T.B.s: *P4304, P4306, P4312, P4315, P4347, P4369, P4373, P4395, P4401* and *P4418. P4290* did overload trials at A. & A.E.E. after what was thought to be a structural failure in flight with this type. *P4335* was first Hampden with balloon cable cutters.)

P5298–5436 (80 a/c. Canadian-built. Ordered autumn 1938 and first-off flew 9th Aug. 1940. *P5298–5337* by Quebec Group and *P5386–5400, P5421–5436* by Ontario Group). (Following a/c converted to T.B.s: *P5301, P5302, P5304, P5309, P5315, P5320, P5327, P5331, P5335, P5341, P5343, P5387* and *P5389.*)

X2983–2922, X2959–3008, X3021–3030, X3047–3066, X3115–3154 (150 a/c. E.E. Co.-built. Ordered 21st April 1939). (Following a/c converted to T.B.s and left in Russian hands ex. No. 455 Sqdn., R.A.A.F.: *X2976, X3022* and *X3131. X3115* was Mk. II prototype.)

AD719–768, AD782–806, AD824–873 (125 a/c. E.E. Co.-built. Ordered 20th Dec. 1939). (*AD743* converted to T.B.)

AD895–939, AD959–988, AE115–159, AE218–267, AE286–320, AE352–401, AE418–442 (300 a/c. E.E. Co.-built. Ordered 6th July 1940). (Following a/c converted to T.B.s and transferred to Russia: *AD908* and *AD977, AE194, AE231, AE307, AE310* and *AE363.*)

AJ988–999 (12 a/c. Canadian-built. Mostly delivered to No. 32 O.T.U.).

AN100–167 (68 a/c. Canadian-built). (Following a/c converted to T.B.s: *AN123, AN125, AN127, AN137, AN146, AN148, AN149, AN151–161, AN163–164, AN166* and *AN167.*)

AT109–158, AT172–196, AT216–260 (120 a/c. E.E. Co.-built. Ordered 23rd July 1940). (Following a/c converted to T.B.s: *AT109, AT114, AT117, AT125, AT135, AT145, AT150, AT184, AT193, AT195, AT232, AT241, AT243, AT244, AT251, AT253, AT256–259.*)

H.P. 53 Hereford.

L6002–6101 (100 a/c). (*L6011, L6018–6020, L6055, L6076, L6084, L6089, L6096* converted to Hampdens.)

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SPECIFICATION

(Relates to Hampden I, and all performance figures quoted from manufacturer's brochure.)

Powerplant: Two 980-h.p. Bristol Pegasus XVIII nine-cylinder radial air-cooled engines in NACA type cowlings. Three-bladed de Havilland constant-speed airscrews.

Dimensions: Span 69 ft. 2 in., length 53 ft. 7 in., height tail-up static 14 ft. 11 in. (u/c free 15 ft. 8 in.), height tail-down static 14 ft. 4 in., max. fuselage width 3 ft., max. fuselage depth 8·7 ft., track 17 ft. 4 in., chord (root) 16·29 ft., chord (tip) 3·85 ft., tailplane span 21·17 ft.

Weights and Loadings: Weight empty 11,780 lb., fuel 3,173 lb., oil 216 lb., service load (including crew of 4 and 5 parachutes) 3,587 lb., weight loaded 18,756 lb., max. permissible loaded weight 21,000 lb., wing loading (normal) 28·1 lb./sq. ft., power loading (normal take-off) 9·77 lb. per h.p.

Fuel: Petrol—max. 654 gal., oil—max. 36 gal.

Performance: Maximum speed (at 18,756 lb.), 265 m.p.h. at 15,500 ft.; 254 m.p.h. at 13,800 ft.; maximum cruising speed, 217 m.p.h. at 15,000 ft.; economical cruising speed, 167 m.p.h. at 15,000 ft.; initial climb rate, 980 ft./min.; time to 15,000 ft., 18·9 min.; service ceiling, 22,700 ft.; range (at 21,000 lb. with maximum bomb load of 4,000 lb.), 870 mls. at 172 m.p.h. at 15,000 ft.; maximum range (with 2,000-lb. bomb load), 1,990 mls.

Armament: One fixed and one movable 0·303-in. Vickers "K" gas-operated machine guns in nose and twin 0·303-in. Vickers "K" gas-operated machine guns in dorsal and ventral positions. Max. internal bomb load, 4,000 lb.

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